

**Effective Date:** Summer 2004-2005

**Course Description**

Prerequisite: A grade of “C” or better in PHSC 1001. A non-technical survey course in the physical sciences. Topics are taken primarily from the fields of astronomy, meteorology, and earth science. Credit will not be given for both this course and any other college level astronomy.

**Course Objectives**

Students will:

1. Gain an understanding of the physical universe with a focus on the nature of our solar system and stellar systems.
2. Learn to visualize the motions of celestial objects in relationship to each other.
3. Gain an understanding of the vast distances that separate celestial objects and the linear units used to measure these distances.
4. Study the nuclear fusion reactions that occur in the core of our sun and in the cores of other stars.
5. Examine the science of weather and discuss climate on a global, national and local scale.
6. Understand basic principles of geology, such as the structure and processes of the earth system.
7. Become aware of the historical dimension of the topics addressed.
8. Appreciate the role of technology in the application of and advancement of scientific knowledge.

**Procedures to Evaluate these Objectives**

1. In-class problems after concept presentation
2. In-class exams
3. Cumulative final exam

**Use of Results of Evaluation to Improve the Course**

1. Student responses to in-class problems will be used to immediately help clarify any misunderstandings and to later adjust the appropriate course material.
2. All exams will be graded and examined to determine areas of teaching which could use improvement.
3. All evaluation methods will be used to determine the efficacy of the material presentation.

**Detailed Topical Outline**

\* Throughout the astronomy section motions will be emphasized with discussion, diagrams, demonstration, and slides.

1. Introduction to Astronomy
  - a. Overview of the Solar System
  - b. Units of linear measure (Astronomical Unit, Light Year, Parsec)
  - c. Time and Space
  - d. Charts of the Night Sky
2. The Stars
  - a. Star and Constellation Names
  - b. Coordinate Systems and the Celestial Sphere
  - c. Measurement of a Stars Brightness (Magnitude Problems)
3. Stellar Evolution
  - a. Star Formation (Proto-Star to Star)
  - b. Nuclear Fusion Reactions (Proton-Proton and Triple Alpha)
  - c. The Hertzsprung - Russell Diagram
  - d. Red Giants and White Dwarfs
4. The Earth's Seasons and Weather
  - a. Apparent Motions of the sun (Gnomon Problems)
  - b. Day Length (Effects of Latitude and Date)
  - c. Pressure Systems, Frontal Systems and Local Climate
5. The Terrestrial Planets
  - a. Mercury, Venus, Earth, and Mars
  - b. Positions and Observations
  - c. Mars at its nearest point to Earth in 60,000 years
6. The Jovian Planets and Pluto
  - a. Structure and Composition
  - b. Conjunctions and Oppositions
7. Earth Science
  - a. Types of Rocks
  - b. Rock Cycle
  - c. Plate Tectonics
  - d. Water Cycle